



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE.	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,680	10/12/2001	Paul Amadeo	12543-005001	1143

7590

10/27/2005

Paul Amadeo
Chief Information Officer
American Pacific Technology
6827 Nancy Ridge Drive
San Diego, CA 92130

EXAMINER

THANGAVELU, KANDASAMY

ART UNIT	PAPER NUMBER
----------	--------------

2123

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/976,680

Applicant(s)

AMADEO ET AL.

Examiner

Kandasamy Thangavelu

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 33-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 33-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/9/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Response mailed on August 9, 2005. Claims 1-32 were cancelled. Claims 33-41 were added. Claims 33-41 of the application are pending. This office action is made final.

Drawings

2. The drawings submitted on August 9, 2005 are accepted.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

Art Unit: 2123

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 33, 34, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bashan et al.** (U.S. Patent 6,719,206) in view of **Chung** (U.S. Patent 6,404,643) and **Akram** (U.S. Patent 6,762,502) and further in view of **Sienz et al.** (U.S. Patent 6,118,245) and **Leighton** (U.S. Patent 6,514,367).

5.1 **Bashan et al.** teaches data transaction card and method of manufacturing thereof.

Specifically as per claim 33, **Bashan et al.** teaches a method for manufacturing a plurality of smart cards (Abstract, L1-8 and L16-17); the method comprising the steps of:

including the location of an integrated circuit (IC) on a non-conductive substrate (Abstract, L2-8; CL3, L10-11; CL3, L19-20), the location of wire bonds between the IC and a wire antenna to be located on the substrate (Abstract, L8-11; CL2, L45-49; CL4, L53-56; CL4, L65-67), and the pattern of the wire antenna on the substrate relative to the IC (CL2, L26-28);

making holes in the non-conductive substrate so as to accommodate respective ICs therewithin (CL3, L18-19; Abstract, L3-8);

embedding antenna wires in the substrate with a size, shape and number of windings according to the information in the file so that each antenna wire is located in proximity to a corresponding IC on the substrate (CL3, L49-51; CL2, L26-28; Abstract, L8-11; CL2, L45-49; CL4, L53-56); and

bonding the antenna wires embedded in the substrate to respective ICs at wire bonds formed therebetween according to the information in the drawing so that the antenna wires are electrically connected to the ICs (Abstract, L8-11; CL6, L43-47);

wherein each smart card has an IC and an antenna wire electrically connected thereto at a wire bond by which power is supplied to the IC and by which to enable the IC to communicate with a remote card reader (CL3, L24-27; CL6, L50-57; CL1, L28-29).

Bashan et al. does not expressly teach laminating opposite sides of the substrate to cover the ICs and the antenna wires embedded therein. **Chung** teaches laminating opposite sides of the substrate to cover the ICs and the antenna wires embedded therein (CL3, L39-54; CL4, L19-24); and making smart cards using layered manufacturing, in which smart cards are made by laminating layers of various materials, at least one of the layers accommodating an integrated circuit (CL3, L30-54), because that allows manufacturing the smart cards using a simple and less expensive method suited for automated high speed and high volume production (CL4, L10-15). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.** with the method of **Chung** that included laminating opposite sides of the substrate to cover the ICs and the antenna wires embedded therein; and making smart cards using layered manufacturing and cold pressing technique, in which smart cards were made by laminating layers of various materials, at least one of the layers accommodating an integrated circuit. The artisan would have been motivated because that would allow manufacturing the smart cards using a simple and less expensive method suited for automated high speed and high volume production.

Bashan et al. does not expressly teach loading into a computer a CAD drawing file having information that is representative of the configuration of one of the plurality of smart cards; accessing the information in the CAD drawing file; making holes in the non-conductive substrate according to the information in the CAD drawing so as to accommodate respective ICs therewithin; embedding antenna wires in the substrate with a size, shape and number of windings according to the information in the CAD drawing file; and bonding the antenna wires embedded in the substrate to respective ICs at wire bonds formed therebetween according to the information in the CAD drawing. **Akram** teaches loading into a computer a CAD drawing file having information that is representative of the configuration of one of the plurality of smart cards; and accessing the information in the CAD drawing file (CL2, L38-41; CL3, L12-16; CL3, L26-28; CL11, L1-12); making holes in the non-conductive substrate according to the information in the CAD drawing so as to accommodate respective ICs therewithin; embedding antenna wires in the substrate with a size, shape and number of windings according to the information in the CAD drawing file; and bonding the antenna wires embedded in the substrate to respective ICs at wire bonds formed therebetween according to the information in the CAD drawing (CL2, L38-41; CL3, L12-16; CL3, L26-28; CL11, L1-12), because that allows manufacturing the smart cards using a layered manufacturing technique (CL2, L34-35) and building the actual body of the object layer by layer (CL2, L52-53); and large scale production of the smart cards using rapid fabrication of the objects from CAD files (CL1, L22-23; CL3, L22-24). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.** with the method of **Akram** that included loading into a computer a CAD drawing file having information that is representative of the

Art Unit: 2123

configuration of one of the plurality of smart cards; and accessing the information in the CAD drawing file; making holes in the non-conductive substrate according to the information in the CAD drawing so as to accommodate respective ICs therewithin; embedding antenna wires in the substrate with a size, shape and number of windings according to the information in the CAD drawing file; and bonding the antenna wires embedded in the substrate to respective ICs at wire bonds formed therebetween according to the information in the CAD drawing. The artisan would have been motivated because that would allow manufacturing the smart cards using a layered manufacturing technique and building the actual body of the object layer by layer; and large scale production of the smart cards using rapid fabrication of the objects from CAD files.

Bashan et al. does not expressly teach removing ICs from a supply thereof and placing the ICs into the holes made in the substrate. **Sienz et al.** teaches removing ICs from a supply thereof and placing the ICs into the holes made in the substrate (CL1, L29-32), because that allows placing the IC into the holes with pinpoint accuracy and moving from point-to-point at high speed (CL1, L29-32). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.** with the method of **Sienz et al.** that included removing ICs from a supply thereof and placing the ICs into the holes made in the substrate. The artisan would have been motivated because that would allow placing the IC into the holes with pinpoint accuracy and moving from point-to-point at high speed.

Bashan et al. does not expressly teach cutting the substrate into the plurality of smart cards. **Leighton** teaches cutting the substrate into the plurality of smart cards (CL5, L16-27), because that allows manufacturing a plurality of smart cards simultaneously (CL5, L20-21). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to

Art Unit: 2123

modify the method of **Bashan et al.** with the method of **Leighton** that included cutting the substrate into the plurality of smart cards. The artisan would have been motivated because that would allow manufacturing a plurality of smart cards simultaneously.

5.2 As per claims 34, 36 and 38, **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** teach the method of claim 33. **Bashan et al.**, **Chung**, **Akram** and **Leighton** do not expressly teach including the additional steps of transferring the ICs from the supply of ICs in a shuttle to a robot; the robot removing the ICs from the shuttle and placing the ICs in respective ones of the holes in the substrate; including the additional step of robotically embedding the antenna wires in the substrate; and including the additional step of robotically bonding the antenna wires embedded in the substrate to respective ones of the ICs. **Sienz et al.** teaches including the additional steps of transferring the ICs from the supply of ICs in a shuttle to a robot; the robot removing the ICs from the shuttle and placing the ICs in respective ones of the holes in the substrate; including the additional step of robotically embedding the antenna wires in the substrate; and including the additional step of robotically bonding the antenna wires embedded in the substrate to respective ones of the ICs (CL2, L6-8; CL2, L26-29; CL2, L17-25), because that allows placing the IC and the antenna wires into the holes with pinpoint accuracy, bonding the antenna wires embedded in the substrate to respective ones of the ICs with pinpoint accuracy and moving from point-to-point at high speed (CL1, L29-32). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.**, **Chung**, **Akram** and **Leighton** with the method of **Sienz et al.** that included including the additional steps of transferring the ICs from the supply of ICs in a shuttle to a robot; the robot

removing the ICs from the shuttle and placing the ICs in respective ones of the holes in the substrate; including the additional step of robotically embedding the antenna wires in the substrate; and including the additional step of robotically bonding the antenna wires embedded in the substrate to respective ones of the ICs. The artisan would have been motivated because that would allow placing the IC and the antenna wires into the holes with pinpoint accuracy, bonding the antenna wires embedded in the substrate to respective ones of the ICs with pinpoint accuracy and moving from point-to-point at high speed.

6. Claims 35 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bashan et al.** (U.S. Patent 6,719,206) in view of **Chung** (U.S. Patent 6,404,643), **Akram** (U.S. Patent 6,762,502); **Sienz et al.** (U.S. Patent 6,118,245) and **Leighton** (U.S. Patent 6,514,367), and further in view of **Laroche et al.** (U.S. Patent 6,566,163).

6.1 As per claims 35 and 39, **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** teach the method of claim 33. **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** do not expressly teach including the additional step of heating the antenna wires to be embedded in the substrate by means of an ultrasonic transducer so as to melt the substrate to receive the antenna wires; and the step of bonding the antenna wires to respective ones of the ICs is performed by thermo-compression welding. **Laroche et al.** teaches including the additional step of heating the antenna wires to be embedded in the substrate by means of an ultrasonic transducer so as to melt the substrate to receive the antenna wires; and the step of bonding the antenna wires to respective ones of the ICs is performed by thermo-compression welding (CL3, L15-22), because that allows

Art Unit: 2123

connecting the antenna to the integrated circuit chip meeting the mechanical strength, reliability and manufacturing cost constraints (CL1, L27-32). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** with the method of **Laroche et al.** that included including the additional step of heating the antenna wires to be embedded in the substrate by means of an ultrasonic transducer so as to melt the substrate to receive the antenna wires; and the step of bonding the antenna wires to respective ones of the ICs is performed by thermo-compression welding. The artisan would have been motivated because that would allow connecting the antenna to the integrated circuit chip meeting the mechanical strength, reliability and manufacturing cost constraints.

7. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bashan et al.** (U.S. Patent 6,719,206) in view of **Chung** (U.S. Patent 6,404,643), **Akram** (U.S. Patent 6,762,502), **Sienz et al.** (U.S. Patent 6,118,245) and **Leighton** (U.S. Patent 6,514,367), and further in view of **Finn et al.** (U.S. Patent 6,088,230).

7.1 As per claim 37, **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** teach the method of claim 33. **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** do not expressly teach including the additional steps of continuously feeding a supply of antenna wire from a wiring horn to the substrate to be embedded therein, and cutting individual antenna wires from the supply to be located in proximity and bonded to respective ones of the ICs. **Finn et al.** teaches including the additional steps of continuously feeding a supply of antenna wire from a

Art Unit: 2123

wiring horn to the substrate to be embedded therein, and cutting individual antenna wires from the supply to be located in proximity and bonded to respective ones of the ICs (CL2, L22-30), because that allows installing the coil wire to be bonded to the substrate and connecting the coil wire ends to the contact surfaces of the chip (CL2, L22-25). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** with the method of **Finn et al.** that included including the additional steps of continuously feeding a supply of antenna wire from a wiring horn to the substrate to be embedded therein, and cutting individual antenna wires from the supply to be located in proximity and bonded to respective ones of the ICs. The artisan would have been motivated because that would allow installing the coil wire to be bonded to the substrate and connecting the coil wire ends to the contact surfaces of the chip.

8. Claims 40 and 41 rejected under 35 U.S.C. 103(a) as being unpatentable over **Bashan et al.** (U.S. Patent 6,719,206) in view of **Chung** (U.S. Patent 6,404,643), **Akram** (U.S. Patent 6,762,502), **Sienz et al.** (U.S. Patent 6,118,245) and **Leighton** (U.S. Patent 6,514,367), and further in view of **Lahiri et al.** (U.S. Patent 6,385,762).

8.1 As per claims 40 and 41, **Bashan et al.**, **Chung**, **Akram**, **Sienz et al.** and **Leighton** teach the method of claim 33. **Bashan et al.**, **Chung**, **Sienz et al.** and **Leighton** do not expressly teach including the additional steps of modifying the CAD drawing file, the modified CAD drawing file including modified information that is representative of at least one new feature of the configuration of the plurality of smart cards; and accessing the modified information in the CAD

drawing file. **Akram** teaches including the additional steps of modifying the CAD drawing file, the modified CAD drawing file including modified information that is representative of at least one new feature of the configuration of the plurality of smart cards; and accessing the modified information in the CAD drawing file (CL2, L38-41; CL3, L12-16; CL3, L26-28; CL11, L1-12), because that allows manufacturing the modified smart cards using a layered manufacturing technique (CL2, L34-35) and building the actual body of the object layer by layer (CL2, L52-53); and large scale production of the modified smart cards using rapid fabrication of the objects from CAD files (CL1, L22-23; CL3, L22-24). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.**, **Chung**, **Sienz et al.** and **Leighton** with the method of **Akram** that included loading into a computer a CAD drawing file having information that is representative of the configuration of one of the plurality of smart cards; and accessing the information in the CAD drawing file. The artisan would have been motivated because that would allow manufacturing the modified smart cards using a layered manufacturing technique and building the actual body of the object layer by layer; and large scale production of the modified smart cards using rapid fabrication of the objects from CAD files.

Bashan et al., **Chung**, **Akram**, **Sienz et al.** and **Leighton** do not expressly teach that the information in the CAD drawing file includes positional information in a Cartesian coordinate system and controlling a robotic system to produce the new feature using the accessed information. **Lahiri et al.** teaches that the information in the CAD drawing file includes positional information in a Cartesian coordinate system (CL1, L65-67; CL2, L62-64) and controlling a robotic system to produce the new feature using the accessed information (CL3,

Art Unit: 2123

L35-40), because that allows transferring the electrical and component interconnection information into the computer from database files (CL2, L65-67); and using the robot to locate each connection point and move the robot arm to make the necessary connection (CL3, L50-54). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Bashan et al.**, **Chung, Akram, Sienz et al.** and **Leighton** with the method of **Lahiri et al.** that included the information in the CAD drawing file including positional information in a Cartesian coordinate system and controlling a robotic system to produce the new feature using the accessed information. The artisan would have been motivated because that would allow transferring the electrical and component interconnection information into the computer from database files; and using the robot to locate each connection point and move the robot arm to make the necessary connection.

Conclusion

ACTION IS FINAL

9. Applicant's amendments necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

Art Unit: 2123

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 571-272-3717. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2100 Group receptionist: 571-272-2100.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Art Unit: 2123

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
October 20, 2005


Paul L. Rodriguez 10/21/05
Primary Examiner
Art Unit 2125